

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the application of	)	
	)	
Simpson et al.	)	Group Art Unit: 1793
	)	
Application No.: 09/481,043	)	Examiner: Felton, Aileen B.
	)	
Filed: 01/11/2000	)	Attorney Docket No.:
	)	LLNLP001/IL-10127B
For: PROCESS FOR PREPARING	)	
ENERGETIC MATERIALS	)	
(AS AMENDED)	)	Date: May 18, 2009
	)	

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**ATTENTION: Board of Patent Appeals and Interferences**

**REPLY BRIEF (37 C.F.R. § 1.193)**

This Reply Brief is being filed within two (2) months of the mailing of the Examiner's Answer on March 17, 2009.

Following is an issue-by-issue reply to the Examiner's Answer.

In section (10) "Response to Argument" of the Examiner's Answer mailed March 17, 2009, the Examiner has broken Appellants' arguments down into several main arguments, and presented a response to each generalized argument. Accordingly, the following reply will address each of the Examiner responses.

Response to summarized argument 1:

The Examiner first argues on p. 5 of the Examiner's Answer mailed March 17, 2009 (hereinafter "Examiner's Answer") that the Appellants have argued unexpected results without any proper basis for such a claim. However, Appellants are arguing more than unexpected results. Particularly, one argument presented in the Appeal Brief filed Nov. 2, 2008 (hereinafter

LLNLP001/IL-10127B

“Appeal Brief”) is that the claimed invention was not predictable from bare teachings of the art, nor has predictability been shown. Appellants also present evidence of unexpected results, said evidence being taken from the specification of the present application, and not merely attorney arguments.

Looking first at the question of predictability, the law requires predictability before an invention will be deemed obvious. In the instant case, the claimed invention would not have been predictable from the bare teachings of the prior art itself, or in knowledge generally known to those skilled in the art. The United States Supreme Court has acknowledged that there is no obviousness where the end result is unpredictable. In the recent case, *KSR International v. Teleflex Inc.*, 127 S.Ct. 1727 (2007), the Court’s analysis included by implication the traditional notion that evidence of unpredictable results is evidence of non-obviousness. Therefore, even though the Court made sweeping changes to the obviousness analysis, it acknowledged that if the result of the proposed modification or combination of features is unpredictable, there is no obviousness.

The courts have repeatedly stated that the chemical arts are, by their very nature, unpredictable. This case is no different. The claimed invention is well within the chemical arts, and so is, by its very nature, unpredictable. Besides the inherent unpredictability recognized time and again by the courts, and as further proof of unpredictability, the present application also notes such unpredictability. Reference is made to p. 10, line 25 et seq. of the present application as filed, which is reproduced below in pertinent part:

“A significant observation in a preliminary proof-of-principle experiment is that the presence of the gel structure dramatically decreased the impact sensitivity of an explosive. This result was counter to that expected.” (emphasis added)

From the quote above, it is clear that the claimed invention, being counter to what was expected, was unpredictable.

Moreover, in the rejection at issue, it has not been shown that the materials disclosed by Benziger or Sayles could even be incorporated into a sol-gel process to form a solid energetic material, absent the teachings of the present application. For example, Benziger indicates that the high explosive TATB is formed by animating TCTNB. Particularly, the TCTNB is added to an emulsion of immiscible liquids (as oil in water), namely toluene and water. The TCTNB, when

added to the emulsion, resides in the toluene droplets dispersed in the water. The size of the toluene droplets determines the size of the resulting TATB particles. While the actual result of adding Benziger's emulsion to a sol-gel process is unpredictable, it seems likely that the particles thus formed would be loose particles, while a goal of sol-gel chemistry is to create a solid skeleton. In sharp contrast, all of Benziger's examples require agitation to form the TATB, which is believed to be detrimental to formation of a solid skeleton, i.e., they would be shaken apart by the agitation. Thus, the rejection makes assumptions that are unsupportable. Nor has the Examiner come forth with a rebuttal of such arguments.

Looking next at the question of unexpected results, the Examiner has indicated that no test results have been set forth to show unexpected results, and that the assertion is based solely on attorney arguments. Appellants respectfully disagree, and point to the record to support such assertions. As cited in the appeal brief, reference is again made to p. 10, line 25 et seq. of the present application as filed, reproduced below.

"A significant observation in a preliminary proof-of-principle experiment is that the presence of the gel structure dramatically decreased the impact sensitivity of an explosive. This result was counter to that expected." (emphasis added)

It is clear from the quote above that the result of using the gel structure was surprising and unexpected ("This result was counter to that expected.")

The quote above is not the only place the present application discusses surprising results. Appellants point to p. 11, lines 6-12, which states:

"The desensitization of explosive powders as a consequence of gelation may hold true for shock loading as well as impact. A recent detonation experiment (see Figure 6) found that when an RDX-silica-based xerogel was shocked at pressures adequate to initiate the insensitive high explosive ultrafine TATB it failed to initiate. This is remarkable in that standard nitramine based explosives that have inert binder volumes similar to the RDX-silica xerogel tested are readily initiatable." (emphasis added)

As noted in the quote above, the inventive xerogel failed to initiate, even when it was shocked at pressures adequate to initiate the insensitive high explosive ultrafine TATB. One would have expected the xerogel to perform like other explosives having similar inert binder volumes. However, the xerogel beneficially showed decreased impact sensitivity.

Appellants also point to Fig. 6 and p. 19, lines 4-9, which states:

“The impact sensitivity of an energetic material to unintended initiation is an important safety factor in their use. The drop-hammer sensitivity tests gave some surprising results, which showed that pellets pressed from xerogel molding powders prepared by the powder/particle addition method have significantly lower sensitivities than current state-of-the-art powder mixing technology.” (emphasis added)

From the quotes above, it is clear that the Appellants were surprised at the results afforded by the claimed invention, indicating that the results were not only unexpected, but unpredictable.

Accordingly, it is clear that Appellants’ attorney is not simply making unsupported arguments. Rather, the assertions made herein and in the Appeal Brief are clearly supported by the record. Moreover, such assertions support patentability based on unpredictability of the claimed invention and unexpected results afforded by the claimed invention. It now falls on the Examiner to counter the statements made in the application, and show that the claimed invention was not only predictable, but that Appellants should have expected the results obtained (contrary to their statements in the application). Here, the Examiner has not met her burden.

Response to summarized argument 2:

The Examiner next argues on p. 5 of the Examiner’s Answer that arguments made about specific details of Sayles and Benziger are irrelevant, since the Examiner has utilized these references for the disclosure that it is known in the explosives art to vary porosity, surface area and particle size to influence the burning rate of propellants. The Examiner then asserts that these teachings lead one of skill in the art to utilize sol-gel chemistry which is known for obtaining

porous, high surface area, and small particle size materials since Sayles and Benziger show that it was a known goal in the explosive art to obtain such products.

In reply, Appellants wish to present a quote from the Federal Circuit's very recent decision in *Proctor & Gamble v. Teva Pharmaceuticals* (Fed Cir. 2009), where the court quotes its 1988 *O'Farrell* decision: "Patents are not barred just because it was obvious 'to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it.'" [*In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988)]

In the instant case, the Examiner admits that Sayles and Benziger have been utilized for the disclosure that it is known in the explosives art to vary porosity, surface area and particle size to influence the burning rate of propellants. Guidance does not get more general than that. How should one vary the porosity? How should one vary the surface area? How should one vary the particle size? What effect will varying any one of these variables have on the other variables? From the record, the answers to these questions are not clear.

As noted by the Appellants in the present application, the claimed invention was surprising and unpredictable. Moreover, Appellants note that the products of the claimed invention are surprisingly insensitive to impact. However, the Appellants also note at p. 19, lines 10-11 of the present application that "[d]esensitized materials are only an improvement in technology if they are still able to be ignited with reasonable power outlets." This exemplifies the difficulties in obtaining a workable product. Without the specific teachings of the present application, it is extremely doubtful that one skilled in the art would have been able to discover the secrets of the claimed invention at the time the present invention was made. Nor has the Examiner come forth with a showing of specific guidance as to the particular form of the claimed invention or how to achieve it, as required by *In re O'Farrell*. The failure of the rejection to cite any specific guidance that would lead one to the claimed invention renders the rejection improper.

From the foregoing, it is clear that the Examiner has failed to meet her burden and the rejections should be vacated.

#### Response to summarized argument 3:

The Examiner next argues on p. 5 of the Examiner's Answer that arguments made about admitted prior art from the specification are unpersuasive.

Appellants again respectfully challenge use of the present disclosure as motivation to combine features of any of the references. The law is clear: the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. Here, the motivation is clearly based on Appellants' disclosure, in direct contravention of *Graham*.

Moreover, as noted above, even if any admissions are available for rejection, Appellants reiterate the arguments made above regarding the level of specificity of the prior art guidance required by *In re O'Farrell* to support a rejection. Here, the section of the present application quoted in the rejection provides no such guidance. Again, the failure of the rejection to cite any specific guidance that would lead one to the claimed invention renders the rejection improper.

Further, as noted above, no showing has been made that the materials disclosed by Benziger or Sayles could even be incorporated into a sol-gel process to form a solid energetic material, absent the teachings of the present application. Thus, it appears that the Examiner relies on the teachings of the present application to combine the various parts of the numerous references.

Response to summarized argument 4:

The Examiner next argues on p. 6 of the Examiner's Answer that arguments made regarding the lack of suggestion to combine the references are unpersuasive.

Appellants refer to and reiterate the arguments made in the Appeal Brief.

Moreover, Appellants reiterate the arguments made above regarding the level of specificity of the prior art guidance required by *In re O'Farrell* to support a rejection. Again, the failure of the rejection to cite any specific guidance that would lead one to the claimed invention renders the rejection improper.

Response to summarized argument 5:

The Examiner next argues on p. 6 of the Examiner's Answer that arguments made regarding solution exchange process steps, materials in the pores of the sol-gel, dangling functionalized sites, and a 3-D skeletal structure with void spaces are found in Heinz.

Appellants refer to and reiterate the arguments made in the Appeal Brief.

Moreover, Appellants reiterate the arguments made above regarding the level of specificity of the prior art guidance required by *In re O'Farrell* to support a rejection. Again, the

failure of the rejection to cite any specific guidance that would lead one to the claimed invention renders the rejection improper.

Response to summarized argument 6:

The Examiner next argues on p. 6 of the Examiner's Answer that the article from Science and Technology Review discloses the claimed oxidizer.

Appellants refer to and reiterate the arguments made in the Appeal Brief.

In view of the remarks set forth hereinabove, all of the independent claims are deemed allowable, along with any claims depending therefrom.

In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 971-2573. For payment of any additional fees due in connection with the filing of this paper, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1351 (Order No. LLNLP001).

Respectfully submitted,

By: /Dominic M. Kotab/ Date: May 18, 2009  
Dominic M. Kotab  
Reg. No. 42,762

Zilka-Kotab, PC  
P.O. Box 721120  
San Jose, California 95172-1120  
Telephone: (408) 971-2573  
Facsimile: (408) 971-4660